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2,707,537

"Preparation for the local treatment of hypertrophic cicatrization in acne"

Priority: Feb. 23, 1976, USA, No. 660,084

Patent Claims

1. A preparation for the local treatment of hypertrophic cicatrization in acne, containing 1 to 3 weight/vol.% salicylic acid, 5 to 12 weight/vol.% of a thiosulfate, 15 to 25 weight/vol.% of at least one aliphatic alcohol with 2 or 3 carbon atoms, wherein up to 50 weight/vol.% can be replaced by an alkylene glycol with 2 or 3 carbon atoms, 6 to 15 weight/vol.% of α-aluminum oxide monohydrate particles with approximately 90% aluminum oxide and approximately 9% water, wherein at least 85% of the particles have a particle size of at most 45 microns, and 1.5 to 3.5 weight/vol.% resorcinol or monoesters thereof with a saturated aliphatic carboxylic acid with 1 to 3 carbon atoms, and adjusted to a physiological pH.

2. The preparation according to claim 1, further characterized by an additional content of a complexing agent.

3. The preparation according to claim 2, further characterized in that the complexing agent is disodium ethylenediaminetetraacetic acid.

4. The preparation according to claims 1 to 3, further characterized by an additional content of menthol and/or camphor in a quantity of 0.05 to 0.2 weight/vol.% each.

5. The preparation according to one of claims 1 to 4, further characterized by an additional content of hydrocortisone in a quantity of 0.25 to 2.5 weight/vol.% .

6. The preparation according to one of claims 1 to 5, further characterized by an additional content of 0.1 to 2 weight/vol.% hexachlorophene.

7. The preparation according to one of claims 1 to 6, further characterized by an additional content of 0.1 to 2.5 weight/vol.% p-chloro-m-xylenol.

8. The preparation according to one of claims 1 to 7, further characterized by an additional content of 0.1 to 2 weight/vol.% phenol.

9. The preparation according to one of claims 1 to 8, further characterized by an additional content of 0.1 to 20 weight/vol.% of a nonionic surfactant.

10. The preparation according to one of claims 1 to 9, further characterized by a content of 0.01 to 0.1 weight/vol.% of a cationic surfactant.

11. The preparation according to claim 10, further characterized in that the cationic surfactant is benzalkonium chloride.

12. The preparation according to one of claims 1 to 11, further characterized by an additional content of 1 to 15 weight/vol.% sulfur.

13. The preparation according to one of claims 1 to 12, further characterized by an additional content of 1 to 10 weight/vol.% coal tar.

14. The preparation according to one of claims 1 to 13, further characterized by an additional content of 1 to 15 weight/vol.% Ichthyol.

15. The preparation according to one of claims 1 to 14, further characterized by an additional content of 1 to 20 weight/vol.% tannic acid.

16. The preparation according to one of claims 1 to 15, further characterized by an additional content of 1 to 10 weight/vol.% Peru balsam.

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"Preparation for the local treatment of hypertrophic cicatrization in acne"

The invention concerns the subject characterized in the claims.

The preparation of the invention represents a thixotropic gel, which is suitable for the local treatment or control of hypertrophic cicatrization in acne. The preparation is adjusted to a weakly acidic pH.

The preferred content of salicylic acid amounts to 2 weight/vol.%, i.e., 2 g/100 ml, of the thixotropic gel. Resorcinol or monoesters thereof with a saturated aliphatic carboxylic acid with 1 to 3 carbon atoms. preferably 2 carbon atoms, is preferably used in a quantity of 2 to 3 weight/vol.%. When resorcinol is used, it is generally applied in a quantity of 1.5 to 2.5 weight/vol.%, whereas resorcinol monoester is used in a quantity of 2.5 to 3.5 weight/vol.%.

A physiologically compatible salt, usually an alkali metal salt, in particular, the sodium salt, is preferably used as the thiosulfate. The quantity of thiosulfate preferably amounts to 8 to 10 weight/vol.%. Isopropanol in a quantity of 18 to 22 weight/vol.% is preferably used as the aliphatic alcohol. Up to 50 weight percent of the aliphatic alcohol can be replaced by the alkylene glycol. A special example of an alkylene glycol that can be used is ethylene glycol. The ethylene glycol may be present in a quantity of up to 12.5 weight/vol.%.

The α-aluminum oxide monohydrate used according to the invention is a non-

fibrous aluminum oxide, which is denoted boehmite, and is comprised of approximately 90 weight % aluminum oxide, approximately 9 weight % water, and approximately 0.5 weight % carbon, and the remainder is, for example, silicic acid, iron oxide, sulfur and sodium. Approximately 85 weight% of the α-aluminum oxide monohydrate has a particle size of at most 45μ. Its specific surface generally amounts to approximately 320 m^2/g. The α-aluminum oxide monohydrate is preferably used in a quantity of approximately 10 weight/vol.%.

The preparation of the invention preferably also contains a complexing agent, in order to inhibit the oxidation of the active ingredients. The preferred complexing agent is disodium ethylenediaminetetraacetic acid. The complexing agent is in general used in such quantities that trace metals are bound as complexes. Usually the quantity amounts to approximately 0.05 to 0.5, preferably 0.1 to 0.2 weight/vol.%.

The preparation of the invention may contain other additives; special examples are menthol, camphor and hydrocortisone. Camphor and menthol are in general used in quantities of approximately 0.05 to 0.2 weight/vol.% each. Hydrocortisone may be present in quantities of 0.25 to 2.5 weight/vol.%.

The preparation of the invention can also contain hexachlorophene in a quantity of 0.1 to 2 weight/vol.%, p-chloro-m-xylenol in a quantity of 0.1 to 2.5 weight/vol.%, phenol in a quantity of 0.1 to 2 weight/vol.%, a nonionic surfactant in a quantity of 0.1 to 20 weight/vol.%, a cationic surfactant, preferably benzalkonium chloride, in a quantity of 0.01 to 0.1 weight/vol.%, sulfur in a quantity of 1 to 15 weight/vol.%, coal tar in a quantity of 1 to 10 weight/vol.%, Ichthyol in a quantity of 1 to 15 weight/vol.%, tannic acid in a quantity of 1 to 20 weight/vol.%, and/or Peru balsam in a quantity of 1 to 10 weight/vol.%. The total quantity of this additive amounts to at most 25 weight/vol.%, preferably at most 15 weight/vol.%, and, in particular, at most 5 weight/vol.%.

The pH of the preparation of the invention is in general adjusted to a value of approximately 5 to 6, preferably approximately 5.5. This can be achieved by addition of an alkali metal hydroxide, preferably sodium hydroxide.

In addition to the above-named components, the preparation of the invention contains water, in order to adjust the total quantity to 100 weight%.

For the production of the preparation of the invention, at first the α-aluminum oxide monohydrate is dispersed in a portion of the total quantity of the water used, usually in a quantity of approximately 60 to 90% of the total quantity of the water. Then the thiosulfate is added in the form of an aqueous solution and the mixture is uniformly dispersed. The organic components are dissolved in the aliphatic alcohol or the mixture of the aliphatic alcohol and the alkylene glycol, and the solution is slowly added to the aqueous dispersion with vigorous stirring. After formation of a homogeneous gel, the pH is adjusted to a value in the above-given range by addition of sodium hydroxide.

The preparation of the invention is a nontransparent gel, which can easily be applied onto the skin, with the formation of a a transparent layer. The preparation serves for the treatment of sebaceous accumulations, pustules and papules, as they may occur in Acne vulgaris. With regular application, the formation of blackheads can be prevented. The preparation of the invention is also suitable for the treatment of tinea versicolor, seborrheic dermatitis, as well as other disorders, which are associated with hyperplasia that has been brought about by infected sebaceous glands.

The preparation of the invention dries quickly and forms a practically clear film on the skin, and this film does not disrupt the normal breathing of the skin.

The composition of a preparation of the invention is given as an Example below.

Components	weight/vol.%
salicylic acid	2.0
resorcinol monoacetate	2.74
sodium thiosulfate	8.8
menthol	0.1
camphor	0.1
disodium ethylenediaminetetraacetic acid	0.1
α-aluminium oxide monohydrate (Dispal M)	10.0
isopropanol	19.6
water to	100 ml

The preparation is adjusted with 40 weight% sodium hydroxide to a pH of 5.5.

The preparation has the additional advantage that it can be stored for a long time without separation of the components. Also, it is not subject to oxidative decomposition over a long time with normal use.